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Dr. Liqing Liu  
10 Evergreen Common, SW  
Calgary, AB, T2Y 4N8  
CANADA  
Work Phone: (403) 644 3901  
Email: [liqing.liu@gmail.com](mailto:liqing.liu@gmail.com)  
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ATTN: Mr. David Parsley  
Examiner  
U.S. Patent and Trademark Office  
P. O. Box 1450  
Alexandria, Virginia 22313-1450  
Phone: (571) 272 6890  
Fax: (571) 273 8300

**RE: US 2007/0056462 A1 Not Patentable – A New Fact**

Dear Mr. David Parsley:

Further to my letter of protest dated December 11, 2008 against the patentability of the named application, I would like to submit to you a new fact against its patentability.

The fact is that according to another issued US patent 5,212,343 (to Brupbacher et al), the use of intermetallics (including NiAl) is obviously anticipated with my invention USP 7,393,423.


The named application has no new invention at all.

The Brupbacher et al patent further proves that the named application is hiding an important fact that its shaped charge (perforator) has to be used in water.

To meet the protest requirements by USPTO, please send a copy of this document to the applicant of the named application.

Should you need other information, please do not hesitate to contact me.

Thanks and best regards.



Liqing Liu  
(Inventor and stakeholder of USP 7,393,423)

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**Patent Application: US 2007/0056462 A1**  
**A New Fact against Its Patentability**

An Observation Prepared for USPTO  
Prepared and Submitted by:  
Dr. Liqing Liu  
10 Evergreen Common, SW  
Calgary, AB, T2Y 4N8 CANADA  
Work Phone: (403) 644 3901  
Email: liqing.liu@gmail.com

**Biblio. Data of the Application in Question**

(10) Pub. No.: US 2007/0056462 A1  
(43) Pub. Date: Mar. 15, 2007  
(54) OIL WELL PERFORATORS  
(21) Appl. No. 10/574,999  
(22) PCT Filed: Oct. 8, 2004  
(30) Foreign Application Priority Data  
Oct. 10, 2003  
(GB).....0323717.9 (not valid,  
abandoned before publication)  
(73) Qinetiq Limited

**Biblio. Data of Issued US Patent**

(10) Patent No.: US 7,393,423 B2  
(45) Date of Patent: Jul. 1, 2008  
(54) USE OF ALUMINUM IN  
PERFORATING AND STIMULATING  
A SUBTERRANEAN FORMATION  
AND OTHER ENGINEERING  
APPLICATIONS  
(21) Appl. No.: 09/923,368  
(22) Filed: Aug. 8, 2001  
(65) Prior Publication Data  
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(45) Date of Patent: Jul. 1, 2008

The issued US patent 7,393,423 has full disclosure to a shaped charge to concurrently perforate and fracture a subterranean formation by creating an explosion (molten aluminum-water reaction) in the perforation. A liner of the shaped charge according to this patent contains a certain amount of aluminum (or its alloy), which is heated using physical methods (shock wave heating and heating by detonation products) or be heated by a combination of physical and chemical methods (use of Al-based energetic material). Then the molten aluminum is projected into the perforation and forced to react with water in the perforation, fracturing and cleaning the perforation.

The application in question claims an invention in the use of intermetallics. Actually, there is nothing new in their application given the fact that this is disclosed by another issued US patent 5,212,343 to Brupbacher et al. Particularly, please see column 4, lines 46-61 of this patent, cited and repeated below:

**It is to be noted that while the present disclosure emphasizes the formation of ceramic reaction masses such as borides, the formation of intermetallic reaction masses is also within the scope of the present invention. In the formation of intermetallic reaction masses, the reactive elements are selected such that they undergo a highly exothermic reaction to form an intermetallic material which in turn is reactive with water at elevated temperatures. Suitable intermetallics include aluminides, beryllides, silicides, and intermetallics of chromium with transition metals. Examples of some intermetallics**

include  $\text{Ni}_3\text{Al}$ ,  $\text{NiAl}$ ,  $\text{Ti}_3\text{Al}$ ,  $\text{TiAl}$ ,  $\text{TiAl}_3$ ,  $\text{FeAl}$ ,  $\text{Nb}_3\text{Al}$ ,  $\text{Nb}_2\text{Al}$ ,  $\text{NbAl}_3$ ,  $\text{Ti}_5\text{Si}_3$ ,  $\text{Zr}_5\text{Si}_3$ ,  $\text{VSi}_2$ ,  $\text{BaSi}_3$ ,  $\text{NbSi}_2$ ,  $\text{Cr}_5\text{Si}_3$ ,  $\text{Ta}_5\text{Si}_3$ ,  $\text{TiBe}_{12}$ ,  $\text{NbBe}_{12}$ ,  $\text{VBe}_{12}$  and  $\text{YBe}_{12}$ . Of the aluminides, nickel aluminides and titanium aluminides are particularly suitable.

Given the disclosures by my patent 7,393,423 and that by Brupbacher et al., the application in question is obviously anticipated, there is no new invention at all and there is nothing to be protected by a patent.

Also, as emphasized by my letter of protest dated December 11, 2008, the shaped charge (perforator) according to the application in question has to be used in water, otherwise it is basically useless. The Brupbacher et al. patent can serve as further proof to my statement. However, such an important fact is not mentioned at all in the application in question. Is the applicant intentionally hiding the fact, hoping to take a chance to pass the examinations by USPTO?

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